**MCA Practice Problems Worksheet #5 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

(geometry) Name

1. Name 2 pairs of vertical angles in the picture below. 2. Find the missing values in the picture if **∠**1 = 35°

1

4

2

3

A

E

D

B

C

85°

20°

3. Find x if the angles pictured are supplementary 4. Fill in the missing angle values.

2*x* + 8

3*x* + 7

5. Find x and y in the following picture 6. Find x if the angles pictured are complementary

5 + *x*

3*x* − 1

115°

2*x* − 5

5*y* + 10

7. Find all the missing angles in the picture 8. Find the missing angle

52°

46°

B

A

C

28°

35°

*x* + 10

2*x*

2*x* − 5

C

B

A

9. Find the missing angles 10. Find x

1

2

64°

124°

**11.** **Solve for all missing parts of the following right triangles. Use SOHCAHTOA**

A

C

B

40°

6

6

10

b

**a. b.**

c. d. e.

12

a

20**°**

5

c

12

6

c

5

30°

60°

x

y

5

17

28°

45°

b

a

7

f. g. h.

30°

60°

18

c

d

**i. j. k.**

30°

60°

x

12

y

45°



n

q

**Vertical Angles, Alternate Interior Angles, Corresponding Angles**

1

5

2

6

3

7

4

8

**Use the picture to the left to answer the following.**

**∠**1 and **∠**6 are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**∠**2 and **∠**4 are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**∠**3and **∠** 6 are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**∠**5 and **∠**7 are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**∠**4 and **∠**7 are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Find the Areas of the following figures**

a = 4

4.62m

9.8cm

19.3cm

10”

22”

13”

8”

6”

14 ft

24 ft

15.8m

10”

3”

5”

4”

#### Surface Area

**MCA Practice Problems Worksheet #6 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

(geometry) Name

**Solve the various problems**

**1. Find the area of the circle, the area of the 150°sector 2. Find the volume and the surface area of the box**

**and the length of the arc from A to B**

14”

5”

9”

A

150°

r = 6

B

3**. Find the volume and the surface area of the cone 4. Find the area of the trapezoid**

3’

5’

4’

10cm

9cm

15cm

**5. Find the volume and surface area of the sphere 6. Find the volume and surface area of the cylinder**

r = 5”

10m

4m

**7. Find the surface area and volume of the prism 8. Find the volume and the surface area of the pyramid**9. A 25-foot ladder is leaning against a building. The base of the ladder is 7 feet from the base of the building. How high up the building does the ladder reach?

16cm

20cm

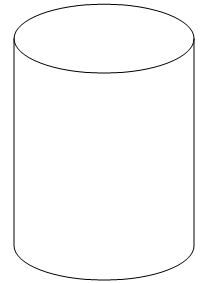
30cm

8’

8’

12’

10. What shape does the vertical cross section of the figure below create?



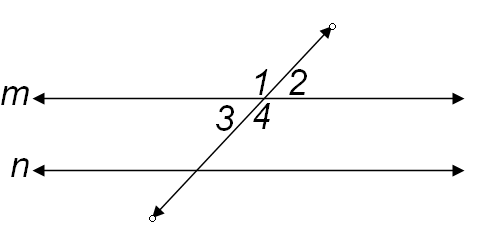
a. circle

b. cylinder

c. rectangle

d. oval

11. In the figure below, the measure of ∠4 is 130°. What is the sum of the measures of ∠2 and ∠3?



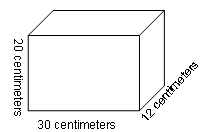
a. 50°

b. 60°

c. 80°

d. 100°

12. Emily needs to make a glass case with the following measurements:



How many square centimeters would it take to construct the case enclosed on all sides?

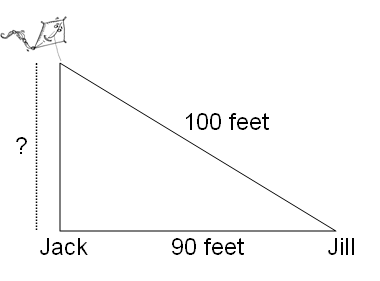
a. 612 square centimeters

b. 2,400 square centimeters

c. 6,200 square centimeters

d. 7,200 square centimeters

13. Jill is flying a kite on 100 feet of string. She holds the end of the kite string to the ground while Jack measures the distance to a point directly under the kite. If the distance from Jill to Jack is 90 feet, how high is the kite above the ground? Answer to the nearest whole foot.



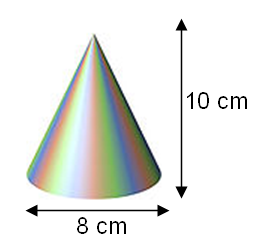
a. 40 feet

b. 42 feet

c. 44 feet

d. 46 feet

14. The cone below has a base with diameter of 8 cm and height of 10 cm.



Use the formula V = πr2h to find the volume of the cone to the nearest cubic centimeter.

(π ≈ 3.14)

a. 42 cm3

b. 167 cm3

c. 503 cm3

d. 670 cm3

**MCA Practice Problems Worksheet #7 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

(probability and stats) Name

**Probability and Data/Statistics Problems**

1. There are 50 students in the school orchestra in the following sections:

25 string section, 15 woodwind, 5 percussion, 5 brass

One student will be chosen at random to present the orchestra director with an award. What is the probability the student will be from the woodwind section?

1. Below is a computer simulation of rolling one six sided cube 50 times.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Outcome | 1 | 2 | 3 | 4 | 5 | 6 |
| Frequency | 8 | 6 | 13 | 11 | 5 | 7 |

1. What is the theoretical probability of rolling a 3 or a 4?
2. Calculate the experimental probability of rolling a 3 or a 4.
3. A company is offering 1 grand prize, 3 second place prizes, and 25 third place prizes based on a random drawing of contest entries. If your entry is one of the 500 total entries, what is the probability you will win a third place prize?
4. A twenty-point quiz is given in algebra. The following list contains the scores of eleven students. Determine if any of the scores are outliers using the definition of an outlier.

An Outlier is a value which lies 1.5 times the inter-quartile range above the third quartile or below the first quartile.

4, 8, 9, 10, 11, 11, 11, 12, 13, 16, 20

1. The frequency chart gives the hourly wage of the employees at BigTop Burgers. Find the mean hourly wage.

|  |  |
| --- | --- |
| **Wage** | **Frequency** |
| $7.50 | 5 |
| $7.90 | 10 |
| $8.30 | 8 |
| $9.70 | 7 |
| $15.80 | 1 |

$7.90 b) $8.60 c) $8.30 d) $9.84

1. What measure of central tendency is most affected by an outlier?

mode b) mean c) median d) standard deviation

1. In a basketball contest, each player will attempt 3 free-throws. If a Sam has a 70% chance of making each free-throw, what is the probability of Sam making exactly 2 out of 3 free-throws?
2. 0.666 b) 0.147 c) 0.21 d) 0.441
3. The weather forecast calls for a 25% chance of rain each day for the next four days. Find the probability that it will rain 3 out of the 4 days.
4. 0.047 b) 0.188 c) 0.012 d) 0.75
5. What is the probability that if a family has 3 children they are all boys? Assume the probability of having a boy = 1/2

a) 0.333 b) 0.125 c) 0.375 d) 0.25

1. Which value will change the most if the outlier is omitted from the data set below?

0 10 11 12 12 12 13 13 14 14 15 16

A. IQR B. Mean C. Median D. Mode

4

1. Between which two variables would you expect to find a high correlation, but not causation?

A: x – number of hours studying B. x – score on a physics test

y – score on a math test y – score on a chemistry test

C. x – number of hours worked D. x – number of CDs purchased

y - amount of paycheck y – total amount spent

1. As a decimal, what is the largest the value of the probability of an event occurring?
2. Use the box and whisker plot to answer the questions below.

0 8 16 24 32 40 48 56

a.What is the Q1 value?

A. 2 B. 8 C. 36 D. 42

b. 50% of data the values are above what value?

A. 8 B. 24 C. 32 D. 38

1. What is the IQR?
2. What is the median?
3. What is the Q3 value?
4. What is the highest number in the sample?
5. A survey shows that 85% of the registered voters in the Centennial School district voted in the last election. Of those who voted, 54% voted to pass the school levy. What is the probability that a registered voter chosen at random voted to pass the school levy?

A. .310 B. .459 C. .540 D. .629

1. There is a 40% chance of rain today and a 20% chance of rain tomorrow. What is the probability that it will rain at least one of the two days?

A. 8% B. 60% C. 48% D. 52%

1. Examine the following two data sets:

**Set #1**:49, 55, 68, 72, 98

**Set #2**: 26, 56, 57, 75, 82, 89

Which of the following statements is true?

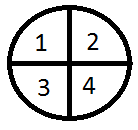
A. They have the same mode. B. They have the same median

C. They have the same mean. D. None of the above is true.

**17.** Using the data in the table at right, answer the following

|  |  |
| --- | --- |
| Age | Frequency |
| 8 | 1 |
| 10 | 3 |
| 14 | 2 |
| 16 | 1 |
| 17 | 2 |

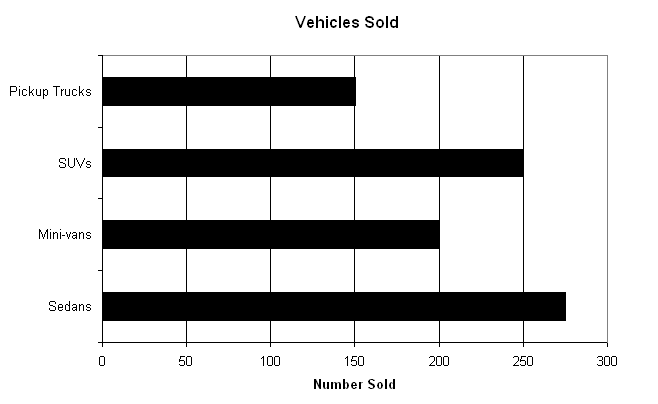
1. mean age = median age
2. mean age > median age
3. mean age < median age



1. mean age < mode age

**18.**  What is the probability of rolling a 5 on a six sided die and spinning 4 on the spinner at right?

**19.** Out of a group of 16 students 6 are to be chosen to serve as peer tutors in algebra. A group of 7 seniors, 5 juniors, and 4 sophomores have volunteered to be tutors. If the students are chosen at random, what is the probability that 2 seniors, 2 juniors, and 2 sophomores will be selected?



**20**. Paul constructed a bar graph showing the number of

each of four types of vehicles sold at Sunshine Motors last year.

Approximately how many more sedans and mini-vans were

sold than SUVs and pickup trucks?

a. 25 b. 50

c. 75 d. 100